

**TECHNICAL REVIEW AND EVALUATION  
OF APPLICATION FOR  
AIR QUALITY PERMIT NUMBER M190310P1-00  
ARIZONA PORTLAND CEMENT COMPANY - RILLITO CEMENT PLANT**

**NOMENCLATURE**

<i>AZSIP</i>	<i>Arizona State Implementation Plan, Prepared by the USEPA Region IX, October 1994. A copy of this document can be obtained by calling the Arizona Department of Environmental Quality at 602-207-2329.</i>
<i>EPA</i>	<i>Environmental Protection Agency</i>
<i>HAP</i>	<i>Hazardous Air Pollutant</i>
<i>lb/hr</i>	<i>pounds per hour</i>
<i>MACT</i>	<i>Maximum Achievable Control Technology</i>
<i>NESHAP</i>	<i>National Emission Standards for Hazardous Air Pollutants</i>
<i>NSPS</i>	<i>New Source Performance Standards</i>
<i>PM<sub>10</sub></i>	<i>Particulate Matter less than 10 microns in diameter</i>
<i>tpy</i>	<i>tons per year</i>
<i>USEPA</i>	<i>United States Environmental Protection Agency</i>

**I. INTRODUCTION**

This permit is for the operation of a cement plant and quarry that is located in Rillito, Arizona. Rillito lies about 10 miles northwest of the city of Tucson, Arizona. Arizona Portland Cement Company's (APCC's) operations consist of a quarry mining operation, limestone processing facilities, three long dry rotary kilns, a preheater/precalciner kiln, five raw mills, nine finish mills, raw material and cement storage facilities and other support operations and equipment.

In August 1998, ADEQ issued a Significant Revision No. 1000547 to APCC's 1994 Operating Permit No. M191365P1-99 for an extensive modernization project referred to as RIMOD 3. The purpose of the modernization was to decrease costs and decrease the emission rate of gaseous pollutants while increasing production utilizing as much of the existing facility as possible to minimize capital expenditure.

Although it is a single, integrated project, RIMOD 3 was scheduled to be built in two construction phases to allow APCC to build sufficient supplies of clinker to provide for customer needs during the shutdown that would accompany the second phase of construction. APCC is nearing completion of the first phase of construction. The second construction phase has, therefore, not begun.

Since 1998 when the permit for RIMOD 3 was issued, APCC has developed an alternate plan that would substitute new, more efficient, but more costly, equipment to accomplish RIMOD 3's production and emission reduction goals. Under APCC's alternate plan for RIMOD 3, the company would retire Kilns 1, 2, and 3, which APCC has operated for 50 years and which represent technology that is over 90 years old, and substitute a new, state-of-the-art Kiln 5 and associated equipment. This alternate plan would not increase plant capacity or emissions above currently permitted levels.

APCC included the second phase changes in a revised title V permit application as an alternate operating scenario (“AOS”) and has proposed to accept revised, lower particulate matter emission limitations for the appropriate items of substituted equipment. The AOS project is still under review and will be processed shortly as a significant permit revision. Therefore, this technical support document and the proposed permit contain references to only those pieces of equipment that are currently permitted.

Furthermore, the national emission standards for hazardous air pollutants (NESHAP) for portland cement plants, effective June 10, 2002 and contained in 40 CFR 63 Subpart LLL, applies to both major and area sources of hazardous air pollutants (HAP). Applicable emission limits vary, however, depending on the status of a cement plant as a major or area source of HAP. At the time of permit proposal, APCC has yet to confirm the status of the facility as a major or area source of HAP. ADEQ is therefore including in its proposal conditions for a major and an area source. The proposed permit is therefore broken down into four (4) attachments, A through D. Attachment A contains the General Conditions. Attachment B contains Specific Conditions in the event the facility is a major source of HAP. Attachment C contains Specific Conditions in the event the facility is an area source of HAP. Attachment D contains the equipment list.

#### **A. Company Information**

Facility Name: Arizona Portland Cement Company  
Mailing Address: P.O. Box 338, Rillito, AZ 85654-0338  
Facility Address: 11115 N. Casa Grande Highway, Rillito, AZ 85654-0338  
Responsible Official: Mr. David N. Bittel, Plant Manager

#### **B. Attainment Classification**

The Rillito area is designated as Non-Attainment for PM<sub>10</sub>.

## **II. PROCESS**

The APCC cement plant produces primarily portland cement, masonry, and blended cements. Additional materials for sale to customers include clinker, cement kiln dust (CKD), rock, sand, and other fill materials.

Portland cement is produced by high temperature fusion of materials containing calcium oxide, alumina, iron oxide, and silica. This process produces hard pellets called clinker, which when ground with gypsum and other additives, produces a fine powder called portland cement. Portland cement contains four major compounds or phases: (a) tricalcium silicate (alite); (b) dicalcium silicate (belite); (c) tricalcium aluminate; and (d) tetracalcium aluminoferrite; at concentrations of approximately 50%, 25%, 10%, and 10% by weight, respectively.

The production of portland cement is a four step process: (a) acquisition of raw materials; (b) preparation of the raw materials into raw mix; (c) pyroprocessing (high temperature reacting) of the raw mix to form portland cement clinker; and (d) grinding of the clinker with additives (primarily gypsum) into portland cement.

Raw materials are mined, crushed, proportioned, and finely ground so that the resulting mixture has the desired fineness and chemical composition for delivery to the pyroprocessing system. Carbon in the form of  $\text{CaCO}_3$  is a major constituent of the cement raw mix but is eliminated as  $\text{CO}_2$  during pyroprocessing. Most of the raw materials used in cement manufacturing are naturally occurring rocks and sediments found in the earth's surface. For the APCC cement plant, the largest source of raw materials is limestone mined from the APCC quarry, located approximately four miles southwest of the APCC cement plant.

Natural quarried materials tend to be heterogeneous and depend on site-specific geology. The raw materials used as ingredients to produce portland cement must provide the proper proportions of lime, alumina, iron oxide, and silica. When raw materials mined at the APCC quarry are deficient or have an excess of one or more of these essential ingredients, materials of suitable composition, imported to the plant, are added to adjust the raw mix to the desired proportions.

Clinker is formed when raw materials are heated to approximately 2,700 °F in a rotating kiln. The APCC cement plant currently has four dry process kilns. Kilns 1-3 are long rotary kilns, and Kiln 4 is a short rotary kiln with a preheater/precalciner.

A cement kiln is slightly inclined and rotates on its longitudinal axis. The steel shell of the kiln is lined with refractory to protect the shell and to retain heat within the kiln. A preheater/precalciner consists of one or more cyclone type vessels, and a calciner vessel at the base of the preheater tower. Raw materials are fed into the preheater, or the upper end of the kilns without preheaters, while fuels are burned in the calciner and in the lower end of the kiln. As the kiln rotates, the raw materials move slowly from the upper end to the lower end at a rate controlled by the slope and rotational speed of the kiln. The combustion gases released from fuels move up the kiln counter-current to the downward flow of raw materials. As the raw mix travels down the kiln, it is gradually heated. The pyroprocessing is generally described as a three-step process:

- Drying and Preheating (70 °F - 1,650 °F) - evaporation of free water and evolution of combined water in the argillaceous components.
- Calcining (1,100 °F - 1,650 °F) - calcination of the calcium carbonate to calcium oxide.
- Burning (2,200 °F - 2,700 °F) - reaction of calcium oxide with silicate to form dicalcium silicate; reaction of calcium oxide with the aluminum and iron bearing constituents to form the liquid phase; formation of the clinker nodules; evaporation of volatile constituents (e.g., sodium, potassium, chlorides, and sulfates); reaction of excess calcium oxide with dicalcium silicate to form tricalcium silicate.

The predominant mineral species present during the burning process are dicalcium silicate, abbreviated as  $\text{C}_2\text{S}$ , and tricalcium silicate, abbreviated as  $\text{C}_3\text{S}$ . Tricalcium silicate is produced by reacting calcium oxide with  $\text{C}_2\text{S}$  through solution in a high-temperature liquid phase. During the burning process, partial melting of the material occurs, thereby producing clinker ranging in size from about one-fourth inch to one or two inches in diameter.

After exiting the kiln, the clinker is cooled and conveyed to storage as an intermediate product. The clinker is then mixed with gypsum (added to control the setting time in the final product) and other additives and ground

to form portland cement. Cement is sold as either bulk or bagged product. On occasions APCC has also received clinker for processing into cement, as well as shipped clinker to customers.

### Process Areas – Existing and Planned RIMOD 3 Configurations

#### *Quarry/Mining Operations*

Limestone for cement production is mined from both an elevated (hill) and an open pit quarry. Primary products of the quarry are limestone, shale, and dolomite for cement production, and low grade limestone that is sometimes used by an adjacent portable aggregate plant. Operations at the quarry include drilling, blasting, truck loading, truck haul, and truck unloading. Kiln grade limestone is hauled to the quarry crusher area where it is rear-dumped into the crusher hopper. Low-grade limestone may be hauled to the crusher, but is generally hauled either to the aggregate plant area or to a rock/overburden storage area. Overburden, unsuitable for either cement manufacturing or aggregate, is hauled to the rock/overburden storage area.

#### *Primary Crushing/Screening and Overland Conveying Operations*

Haul trucks rear-dump limestone from the quarry into the truck dump hopper at the Quarry Crusher Building. A pan feeder feeds the quarry rock into a vibrating grizzly where rock is sized with the oversize sent to an impact crusher. Undersize rock from the grizzly and rock processed by the crusher is transported via belt conveyor to a Screen Building for processing by the Primary Screen. After screening, the undersize rock is conveyed to the Surge Storage Building with oversize rock returned to the crusher for further processing.

Quarry rock is reclaimed from the Surge Storage Building on an as-needed basis and transported to the cement plant by an approximately 4-mile long overland conveyor.

The overland conveyor system is also used to convey various additives stored at the quarry to various locations at the cement plant including the Stacker/Reclaimer Building, the Rock Storage Building, and a raw material storage area located at the eastern and western sections of the cement plant.

#### *Raw Material Transport/Storage and Reclaim*

The raw mix used to produce clinker is comprised of limestone from the quarry and various additives necessary to produce the specifications required for Portland cement. Limestone delivered from the quarry by the overland conveyor is stored at the cement plant in the Stacker/Reclaim Building or the Rock Storage Building. The limestone processed by the Roller Mill is reclaimed from the Stacker/Reclaim Building through Belt Conveyor C2-BC7 and stored in two 250-ton surge bins prior to being introduced to the Roller Mill. Limestone processed by the only other raw mills is reclaimed from the Rock Storage Building.

Additives which are used to adjust the raw mix to the desired proportions are added at both the cement plant and the quarry. At the quarry, the import materials are stored in piles, and are subsequently reclaimed and introduced into the process through the Primary Crushing System. These materials are then either mixed directly with the quarry rock in the Stacker/Reclaim building, stored in additive piles at the eastern and western section

of the cement plant, or stored in the Rock Storage Building. Additives stored in piles at the cement plant are introduced into the process through the raw mill system via five Additive Bins for the Roller Mill or two Feed Hoppers for the AC Mills.

### *Raw Materials Milling*

Raw material (limestone and additives) are mixed in approximately the desired quantities and are processed by four raw ball mills and a Roller Mill to produce raw meal for the kilns. The Roller Mill constitutes an in-line mill where the raw materials are dried by passing gases from the Kiln 4 preheater/precalciner. The AC mills use natural gas heaters for drying the raw materials. The roller mill is also equipped with a 50 mmBTU/hour natural gas heater to supplement heat provided by the preheater on an as-needed basis (such as when Kiln 4 is not operating). Emissions from this natural gas heater are vented through the Kiln 4 baghouse and stack and are included as part of the Kiln 4 emissions. Passage of the kiln gases through the raw mix material, primarily calcium carbonate, provides the additional advantage of scrubbing sulfur dioxide and particulates from the kiln gases.

### *Homogenizing and Kiln feed Processes*

Although the raw materials processed by the raw mills are pre-mixed in order to achieve the desired specifications for portland cement production, the resulting raw meal is inhomogeneous which requires further mixing/blending prior to being introduced into the kilns. This operation is generally conducted in the Homogenizing Silos with the raw meal subsequently sent to the Kiln 4 system or the proportioning silos for Kilns 1-3. If the AC raw mills are used to provide raw meal, homogenizing of the raw meal is conducted in the Kiln 1-3 proportioning silos for Kilns 1,2, and 3. The resulting raw meal is then transported to the subsequent six kiln feed silos. Raw meal processed by the AC raw mills which is to be used by Kiln 4 is transported from the six kiln feed silos to the homogenizing HS-1 silo.

### *Kiln Systems*

As previously stated, the APCC facility currently includes three early 1900-vintage long rotary kilns (Kilns 1-3), that were installed at APCC in 1949, 1951, and 1955. APCC also operates a preheater/precalciner kiln constructed in 1971 (Kiln 4). All four kiln systems include associated coolers and conveying systems for transporting the clinker to Clinker Storage located in the Rock Storage Building.

The kilns are capable of using a variety of fuels, including solid fuels (coal, coke), fuel oils including on-specification used oil, and natural gas. Kiln 4 is also designed to use and has historically utilized supplemental fuels such as shredded tires and wood chips. The only fuel requiring on-site preparation for kiln use is coal and coke.

### *Finish Mill Grinding*

Cement is produced by milling, via finish mills, a mixture generally consisting of approximately 95% clinker and 5% gypsum. Finish milling commences with the reclaim and conveying of clinker and gypsum from Clinker

Storage to storage bins for the D2 finish mill, and to hoppers in Clinker Storage which feed the CM1 – CM7 finish mills, and the D3 finish mill.

#### *Cement Transport, Storage, and Shipment*

Finish cement product is pneumatically conveyed from the finish mills to the cement storage silos. Cement shipment is conducted in bulk, via trucks or railcars, or by sacks. Sacks are filled and prepared for shipment via a cement Packhouse.

### **III APPLICABLE REGULATIONS**

As it has been stated in the introduction section of this document, APCC is yet to determine if they are a major source of HAP emissions. The applicable requirements are dependent upon the status of the source with regard to HAP emissions. Table 1A contains the applicable requirements if APCC is deemed to be a major source of HAPs. Table 1B contains the applicable requirements if APCC is deemed to be an area source of HAPs.

**TABLE 1A : LISTING OF APPLICABLE REQUIREMENTS - HAP MAJOR SOURCE**

This table contains a list of requirements applicable to emission units in the plant. Please note that this table has been provided for reference purposes only, and the list of applicable requirements may not always be exhaustive. All monitoring and testing requirements are not always listed in the column. However, at a minimum, the applicable numerical emissions standard is provided. The permit document itself contains all applicable requirements identified during the course of permit development.

<b>Open Areas, Roadways/Streets, Material Handling, Storage Piles (REQUIREMENTS IN ATTACHMENT B, SECTION II )</b>
AAC R18-2-604, AAC R18-2-605, AAC R18-2-606, AAC R18-2-607, AAC R18-2-608, AAC R18-2-612 Dust Control Plan from Permit 1000547 Pave the Road from Permit 1000547 Monitoring, reporting, recordkeeping, and testing requirements
<b>Quarry (REQUIREMENTS IN ATTACHMENT B, SECTION III )</b>
<i>Equipment not Subject to NSPS</i>  AAC (AZSIP) R9-3-522(A)(2), 40 CFR 52.126(b)(1), AAC R18-2-702(B), AAC R18-2-722(E) Monitoring, reporting, recordkeeping, and testing requirements
<i>Equipment Subject to NSPS</i>  40 CFR § 60.672(a), § 60.672(b) On C-07 : Voluntary limit from Permit 1000547 Condition II(A) Monitoring, reporting, recordkeeping, and testing requirements

**TABLE 1A : LISTING OF APPLICABLE REQUIREMENTS - HAP MAJOR SOURCE (continued)**

<b>Coal Mill System (REQUIREMENTS IN ATTACHMENT B, SECTION IV )</b>
<p><i>Equipment not Subject to NSPS</i></p> <p>AAC R18-2-702(B), AAC R18-2-716(E) Monitoring, reporting, recordkeeping, and testing requirements</p>
<p><i>Equipment Subject to NSPS</i></p> <p>40 CFR § 60.252(c) On S-07, S-13 : Voluntary limit from Permit 1000547 Condition II(A) Monitoring, reporting, recordkeeping, and testing requirements</p>
<p><i>Equipment Subject to NESHAP</i> - In the event that APCC is a major source of HAPs, requirements from 40 CFR 63, Subpart LLL will be applicable some equipment in the coal processing system. 40 CFR § 63.1348 Monitoring, reporting, recordkeeping, and testing requirements</p>
<b>Pyroprocessing System (REQUIREMENTS IN ATTACHMENT B, SECTION V )</b>
<p><i>Kilns 1, 2, 3, 4</i> - In the event that APCC is a major source of HAPs, requirements from 40 CFR 63, Subpart LLL will be applicable to the kilns.</p> <p>40 CFR § 52.126(b)(3), AAC (AZSIP) R9-3-505(B)(1), 40 CFR § 60.62, 40 CFR § 63.1343(b), 40 CFR § 63.1344, 40 CFR § 63.1349(b)(1), 40 CFR § 63.1349(b)(3), 40 CFR § 63.1349(d), 40 CFR § 63.1349(e), 40 CFR § 63.1350(c), 40 CFR § 63.13450(f), 40 CFR § 63.1350(i), 40 CFR § 63.1353, 40 CFR § 63.1354, 40 CFR § 63.1355, 40 CFR § 63.1350(k), AAC R18-2-705(D), AAC R18-2-705(E), Voluntary limits from Permit 1000547 Condition II(A) Particulate matter, carbon monoxide, and nitrogen oxides voluntary limits from Permit 1000547 Condition II(A), Fuel Limitations, Monitoring, reporting recordkeeping, and testing requirements</p>
<p><i>Clinker Coolers 1, 2, 3, 4</i> - In the event that APCC is a major source of HAPs, requirements from 40 CFR 63, Subpart LLL will be applicable to the clinker coolers.</p> <p>AAC (AZSIP) R9-3-505(B)(2), 40 CFR 52.126(b)(3), AAC R18-2-705(E), 40 CFR § 60.62(b), 40 CFR § 63.1345(a), 40 CFR § 63.1349(b)(1), 40 CFR § 63.1350(d), 40 CFR § 63.1353, 40 CFR § 63.1354, 40 CFR § 63.1355 Monitoring, reporting, recordkeeping, and testing requirements</p>



**TABLE 1A : LISTING OF APPLICABLE REQUIREMENTS - HAP MAJOR SOURCE (continued)**

<b>Raw Mills and Finish Mills (REQUIREMENTS IN ATTACHMENT B, SECTION VI)</b>
<p>In the event that APCC is a major source of HAPs, requirements from 40 CFR 63, Subpart LLL will be applicable to the raw mills and finish mills.</p> <p>40 CFR § 63.1347, Permit 1000547 Condition II(A), 40 CFR § 63.1350(e), 40 CFR § 63.1349(b)(2) Monitoring, reporting, recordkeeping, and testing requirements</p>
<b>Process Sources Subject to AAC R18-2-705 and Affected Facilities Subject to 40 CFR 60, Subpart F (REQUIREMENTS IN ATTACHMENT B, SECTION VII)</b>
<p><i>Process Sources Subject to AAC R18-2-705</i> - This part is applicable to equipment located in the area where material from the quarry first enters the plant. This equipment is not subject to 40 CFR 63, Subpart LLL. The state rules for cement plants are applicable.</p> <p>AAC (AZSIP) R9-3-505(B)(3), AAC R18-2-705(C) Monitoring, reporting, recordkeeping, and testing requirements</p> <p><i>Affected Facilities Subject to 40 CFR 60, Subpart F</i> - This part is applicable to equipment located in the area where material from the quarry first enters the plant. This equipment is not subject to 40 CFR 63, Subpart LLL. The NSPS rules for cement plants are applicable because these equipment were installed after the NSPS trigger date.</p> <p>40 CFR § 60.62(c) Monitoring, reporting, recordkeeping, and testing requirements</p>
<b>Affected Sources Subject to 40 CFR 63, Subpart LLL Except for Kilns, Coolers, Raw Mills and Finish Mills (REQUIREMENTS IN ATTACHMENT B, SECTION VIII)</b>
<p>40 CFR 63, Subpart LLL contains requirements for all dust collectors in the plant area.</p> <p>40 CFR § 63.1348, § 63.1350(j), Permit 1000547 Condition II(A) Monitoring, reporting, recordkeeping, and testing requirements</p>
<b>Fuel Burning Equipment (REQUIREMENTS IN ATTACHMENT B, SECTION IX)</b>
<p>AAC R18-2-724(C), AAC R18-2-724(J) Monitoring, reporting, recordkeeping, and testing requirements</p>

**TABLE 1B : LISTING OF APPLICABLE REQUIREMENTS - HAP AREA SOURCE**

This table contains a list of requirements applicable to emission units in the plant. Please note that this table has been provided for reference purposes only, and the list of applicable requirements may not always be exhaustive. All monitoring and testing requirements are not always listed in the column. However, at a minimum, the applicable numerical emissions standard is provided. The permit document itself contains all applicable requirements identified during the course of permit development.

<b>Open Areas, Roadways/Streets, Material Handling, Storage Piles (REQUIREMENTS IN ATTACHMENT C, SECTION II )</b>
AAC R18-2-604, AAC R18-2-605, AAC R18-2-606, AAC R18-2-607, AAC R18-2-608, AAC R18-2-612 Dust Control Plan from Permit 1000547 Pave the Road from Permit 1000547 Monitoring, reporting, recordkeeping, and testing requirements
<b>Quarry (REQUIREMENTS IN ATTACHMENT C, SECTION III )</b>
<i>Equipment not Subject to NSPS</i>  AAC (AZSIP) R9-3-522(A)(2), 40 CFR 52.126(b)(1), AAC R18-2-702(B), AAC R18-2-722(E) Monitoring, reporting, recordkeeping, and testing requirements
<i>Equipment Subject to NSPS</i>  40 CFR § 60.672(a), § 60.672(b) On C-07 : Voluntary limit from Permit 1000547 Condition II(A) Monitoring, reporting, recordkeeping, and testing requirements

**TABLE 1B : LISTING OF APPLICABLE REQUIREMENTS - HAP AREA SOURCE (continued)**

<b>Coal Mill System</b> (REQUIREMENTS IN ATTACHMENT C, SECTION IV )
<i>Equipment not Subject to NSPS</i>  AAC R18-2-702(B), AAC R18-2-716(E) Monitoring, reporting, recordkeeping, and testing requirements
<i>Equipment Subject to NSPS</i>  40 CFR § 60.252(c) On S-07, S-13 : Voluntary limit from Permit 1000547 Condition II(A) Monitoring, reporting, recordkeeping, and testing requirements
<b>Pyroprocessing System</b> (REQUIREMENTS IN ATTACHMENT C, SECTION V )
<i>Kilns 1, 2, 3, 4</i> - In the event that APCC is an area source of HAPs, requirements from 40 CFR 63, Subpart LLL will be applicable to the kilns.  40 CFR § 52.126(b)(3), AAC (AZSIP) R9-3-505(B)(1), 40 CFR § 60.62, 40 CFR § 63.1343(b), 40 CFR § 63.1344, 40 CFR § 63.1349(b)(1), 40 CFR § 63.1349(b)(3), 40 CFR § 63.1349(d), 40 CFR § 63.1349(e), 40 CFR § 63.1350(c), 40 CFR § 63.1350(f), 40 CFR § 63.1350(i), 40 CFR § 63.1353, 40 CFR § 63.1354, 40 CFR § 63.1355, 40 CFR § 63.1350(k), AAC R18-2-705(D), AAC R18-2-705(E), Voluntary limits from Permit 1000547 Condition II(A) Particulate matter, carbon monoxide, and nitrogen oxides voluntary limits from Permit 1000547 Condition II(A), Fuel Limitations, Monitoring, reporting recordkeeping, and testing requirements
<i>Clinker Coolers 1, 2, 3, 4</i> - In the event that APCC is an area source of HAPs, requirements from 40 CFR 63, Subpart LLL will not be applicable to the clinker coolers. Clinker Coolers 1, 2, and 3 are subject to 40 CFR § 52.126(b)(3) and AAC R18-2-705(C). Clinker Cooler 4 is subject to 40 CFR 60, Subpart F  AAC (AZSIP) R9-3-505(B)(2), 40 CFR § 52.126(b)(3), AAC R18-2-705(E), AAC R18-2-705(C), 40 CFR § 60.62(b) Monitoring, reporting, recordkeeping, and testing requirements

**TABLE 1B : LISTING OF APPLICABLE REQUIREMENTS - HAP AREA SOURCE (continued)**

<b>Process Sources Subject to AAC R18-2-705 and Affected Facilities Subject to 40 CFR 60, Subpart F (REQUIREMENTS IN ATTACHMENT B, SECTION VI)</b>
<i>Process Sources Subject to AAC R18-2-705</i>
AAC (AZSIP) R9-3-505(B)(3), AAC R18-2-705(C), Permit 1000547 Condition II(A) Monitoring, reporting, recordkeeping, and testing requirements
<i>Affected Facilities Subject to 40 CFR 60, Subpart F</i>
40 CFR § 60.62(c), Permit 1000547 Condition II(A) Monitoring, reporting, recordkeeping, and testing requirements
<b>Fuel Burning Equipment (REQUIREMENTS IN ATTACHMENT B, SECTION VII)</b>
AAC R18-2-724(C), AAC R18-2-724(J) Monitoring, reporting, recordkeeping, and testing requirements

**IV COMPLIANCE HISTORY**

Compliance history of the source has been reviewed, and no additional conditions were found as a direct result of an enforcement action, that need to be incorporated into the permit as applicable requirements.

**V PREVIOUS PERMITS AND CONDITIONS****TABLE 2 : LISTING OF PREVIOUS PERMITS**

<b>Date Permit Issued</b>	<b>Permit #</b>	<b>Application Basis</b>
April 8, 2002	1001750 ( <i>Appendix 1</i> )	Minor Revision to M191365P1-99
December 5, 2001	1001705 ( <i>Appendix 2</i> )	Minor revision to M191365P1-99
November 21, 2000	1001356 ( <i>Appendix 3</i> )	Minor revision to M191365P1-99
October 19, 2000	1001331 ( <i>Appendix 4</i> )	Minor revision to M191365P1-99
July 13, 2000	1001256 ( <i>Appendix 5</i> )	Minor revision to M191365P1-99
February 11, 2000	1001198 ( <i>Appendix 6</i> )	Minor revision to M191365P1-99
October 20, 1999	1000387 ( <i>Appendix 7</i> )	Minor revision to M191365P1-99
June 28, 1999	1001042 ( <i>Appendix 8</i> )	Minor revision to M191365P1-99
June 24, 1999	1001005 ( <i>Appendix 9</i> )	Minor revision to M191365P1-99

Date Permit Issued	Permit #	Application Basis
February 26, 1999	1000975 ( <i>Appendix 10</i> )	Minor revision to M191365P1-99
February 16, 1999	1000865 ( <i>Appendix 11</i> )	Minor revision to M191365P1-99
August 7, 1998	1000547 ( <i>Appendix 12</i> )	Significant revision to M191365P1-99
Application withdrawn (December 6, 1996)	1000339	Application withdrawn
December 16, 1994	M191365P1-99 ( <i>Appendix 13</i> )	Operating permit for entire facility

**TABLE 3 : PREVIOUS PERMIT CONDITIONS**

This table can be used as a reference tool. It lists conditions from previous permits, and identifies their location in the Class I permit.

Permit 1001750	Permit #M190310P1-00
Conditions 1, 2	Attachment B - Section VIII Attachment C - Part VI(A)
Permit 1001705	Permit #M190310P1-00
Conditions 1, 2, 3	Attachment B - Section VIII Attachment C - Part VI(B)
Permit 1001356	Permit #M190310P1-00
Conditions d, e	Attachment B - Part III(B), Section VIII, Part V(A), Section VI Attachment C - Part III(B), Part V(A), Part VI(A), Part VI(B)
Permit 1001331	Permit #M190310P1-00
-	Attachment B - Condition V(A)(4)(e)((2)) Attachment C - Condition V(A)(4)(e)((2))
Permit 1001256	Permit #M190310P1-00
Conditions 1, 2, and 3	Attachment B - Section VIII Attachment C - Part VI(B)
Permit 1001198	Permit #M190310P1-00
-	All equipment is included in Attachment D.
Permit 1000387	Permit #M190310P1-00
-	Attachment B - Paragraph II(A)(5), Section VI Attachment C - Paragraph II(A)(5), Part VI(A)
Permit 1001042	Permit #M190310P1-00

Condition I	Attachment B - Section VIII Attachment C - Part VI(B)
<b>Permit 1001005</b>	<b>Permit #M190310P1-00</b>
-	Attachment B - Section VII(B) Attachment C - Section VI(B)
<b>Permit 1000975</b>	<b>Permit #M190310P1-00</b>
This crusher system was temporary. It has not been included in the Class I	
<b>Permit 1000865</b>	<b>Permit #M190310P1-00</b>
Aggregate system is covered by a separate permit	
<b>Permit 1000547</b>	<b>Permit #M190310P1-00</b>
Condition II(A)(1,2)	Attachment B - Section V Attachment C - Section V
Condition II(A)(3)	Attachment B - Section IV Attachment C - Section IV
Condition II(A)(4)	Attachment B - Section II Attachment C - Section II
Condition II(A)(5)	Attachment B - Part I(D) Attachment C - Part I(D)
Condition II(A)(6)(a)	Attachment B - Sub-Paragraph III(B)(1)(c), Sub-Paragraph IV(B)(1)(b), Condition V(A)(1)(a)((5)), Paragraph VI(A)(2), Paragraph VIII(A)(2) Attachment C - Sub-Paragraph III(B)(1)(c), Sub-Paragraph IV(B)(1)(b), Condition V(A)(1)(a)((5)), Sub-Paragraph VI(A)(1)(c), Sub-Paragraph VI(B)(1)(b)
Condition II(A)(6)(b)	Attachment B - Paragraph II(A)(4) Attachment C - Paragraph II(A)(4)
Condition II(A) - Sulfur Dioxide	Attachment B - Condition V(A)(1)(a)((4)) Attachment C - Condition (V)(a)(a)((4))
Condition II(A) - Carbon Monoxide	Attachment B - Sub-Paragraph V(A)(1)(b) Attachment C - Sub-Paragraph V(A)(1)(b)
Condition II(A) - Nitrogen Oxides	Attachment B - Sub-Paragraph V(A)(1)(c) Attachment C - Sub-Paragraph V(A)(1)(c)
Condition II(B)	Attachment B - Paragraph III(A)(5), Paragraph III(B)(5), Paragraph IV(A)(5), Paragraph IV(B)(5), Paragraph V(A)(6), Paragraph V(B)(5), Part VI(E), Paragraph VII(A)(5), Paragraph VII(B)(5), Part VIII(E) Attachment C - Paragraph III(A)(5), Paragraph III(B)(5), Paragraph IV(A)(5), Paragraph IV(B)(5), Paragraph V(A)(6), Paragraph V(B)(5), Paragraph VI(A)(5), Paragraph VI(B)(5)
Condition III	Attachment B - Part I(N) Attachment C - Part I(N)

Condition IV	Attachment A - Part XVIII(E)
Condition V	Attachment A - Part XVIII, Attachment B - Paragraph III(A)(4), Paragraph III(B)(4), Paragraph IV(A)(4), Paragraph IV(B)(4), Paragraph V(A)(5), Paragraph V(B)(4), Part VI(D), Paragraph VII(A)(4), Paragraph VII(B)(4), Part VIII(D) Attachment C - Paragraph III(A)(4), Paragraph III(B)(4), Paragraph IV(A)(4), Paragraph IV(B)(4), Paragraph V(A)(5), Paragraph V(B)(4), Paragraph VI(A)(4), Paragraph VI(B)(4)
Condition VI	Attachment B - Sub-Paragraph V(A)(4)(a), Sub-Paragraph V(A)(4)(e), Sub-Paragraph V(A)(4)(h), Sub-Paragraph V(B)(3)(a), Sub-Paragraph V(B)(3)(c) Attachment C - Sub-Paragraph V(A)(4)(a), Sub-Paragraph V(A)(4)(e), Sub-Paragraph V(A)(4)(h), Sub-Paragraph V(B)(3)(a), Sub-Paragraph V(B)(3)(c)
Condition VII	Attachment B - Paragraph V(A)(2), Section X Attachment C - Paragraph V(A)(2), Section VIII
Condition VIII(A)	Attachment B - Part II(B)(4), Sub-Paragraph V(A)(4)(i), Sub-Paragraph V(B)(3)(d) Attachment C - Part II(B)(4), Sub-Paragraph V(A)(4)(i), Sub-Paragraph V(B)(3)(d)
Condition VIII(B)	Attachment B - Paragraph II(B)(1), Paragraph III(A)(3), Paragraph III(B)(3), Paragraph IV(A)(3), Paragraph IV(B)(3), Part VI(C), Paragraph VII(A)(3), Paragraph VII(B)(3), Part VIII(C) Attachment C - Paragraph II(B)(1), Paragraph III(A)(3), Paragraph III(B)(3), Paragraph IV(A)(3), Paragraph IV(B)(3), Paragraph VI(A)(3), Paragraph VI(B)(3)
Condition VIII(C)	Attachment A - Section XII, Attachment B - Sub-Paragraphs V(A)(4)(g, h), Sub-Paragraphs V(B)(3)(c,d) Attachment C - Sub-Paragraphs V(A)(4)(g, h), Sub-Paragraphs V(B)(3)(c)
Condition VIII(D)	This condition results in duplicate reports. It has not been carried over into the Class I permit.
Condition VIII(E)	This one-time requirement has not been carried over into the Class I permit.
Condition VIII(F)	Attachment A - Section XIII
Condition IX	Attachment B - Section X Attachment C - Section VIII
Condition X	Attachment B - Section XI Attachment C - Section IX
Condition XI	Attachment B - Paragraph III(A)(2), Paragraph III(B)(2), Paragraph IV(A)(2), Paragraph IV(B)(2), Paragraph V(A)(3), Paragraph V(B)(2), Part VI(B), Paragraph VII(A)(2), Paragraph VII(B)(2), Part VIII(B) Attachment C - Paragraph III(A)(2), Paragraph III(B)(2), Paragraph IV(A)(2), Paragraph IV(B)(2), Paragraph V(A)(3), Paragraph V(B)(2), Paragraph VI(A)(2), Paragraph VI(B)(2)
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Attachment B - Condition I	Attachment B Attachment C
Attachment B - Condition II(A)(1,2)	Attachment B - Section V
Condition II(A)(3)	Attachment B - Section II Attachment C - Section II
Condition II(A)-Sulfur Dioxide	Attachment B - Condition V(A)(1)(a)((4)) Attachment C - Condition V(A)(1)(a)((4))
Condition II(B)	Attachment B - Paragraph III(A)(5), Paragraph III(B)(5), Paragraph IV(A)(5), Paragraph IV(B)(5), Paragraph V(A)(6), Paragraph V(B)(5), Part VI(E), Paragraph VII(A)(5), Paragraph VII(B)(5), Part VIII(E) Attachment C - Paragraph III(A)(5), Paragraph III(B)(5), Paragraph IV(A)(5), Paragraph IV(B)(5), Paragraph V(A)(6), Paragraph V(B)(5), Paragraph VI(A)(5), Paragraph VI(B)(5)
Condition III	Attachment A - Part XVIII(E)
Condition IV	Attachment A - Part XVIII, Attachment B - Paragraph III(A)(4), Paragraph III(B)(4), Paragraph IV(A)(4), Paragraph IV(B)(4), Paragraph V(A)(5), Sub-Paragraph V(2)(b), Paragraph V(B)(4), Part VI(D), Paragraph VII(A)(4), Paragraph VII(B)(4), Part VIII(D) Attachment C - Paragraph III(A)(4), Paragraph III(B)(4), Paragraph IV(A)(4), Paragraph IV(B)(4), Paragraph V(A)(5), Sub-Paragraph V(2)(b), Paragraph V(B)(4), Paragraph VI(A)(4), Paragraph VI(B)(4)
Condition V	Attachment B - Sub-Paragraph V(A)(4)(a), Sub-Paragraph V(A)(4)(e), Sub-Paragraph V(A)(4)(h), Sub-Paragraph V(B)(3)(a), Sub-Paragraph V(B)(3)(c) Attachment C - Sub-Paragraph V(A)(4)(a), Sub-Paragraph V(A)(4)(e), Sub-Paragraph V(A)(4)(h), Sub-Paragraph V(B)(3)(a), Sub-Paragraph V(B)(3)(c)
Condition VI	Attachment B - Paragraph V(A)(2), Section X Attachment C - Paragraph V(A)(2), Section VIII
Condition VII	Attachment B - Part II(B)(4), Sub-Paragraph V(A)(4)(i), Sub-Paragraph V(B)(3)(d) Attachment C - Part II(B)(4), Sub-Paragraph V(A)(4)(i), Sub-Paragraph V(B)(3)(d)
Condition VIII	Attachment B - Section X Attachment C - Section VIII
Condition IX	Attachment B - Section XI Attachment C - Section IX
Condition X	Attachment B - Paragraph III(A)(2), Paragraph III(B)(2), Paragraph IV(A)(2), Paragraph IV(B)(2), Paragraph V(A)(3), Paragraph V(B)(2), Part VI(B), Paragraph VII(A)(2), Paragraph VII(B)(2), Part VIII(B) Attachment C - Paragraph III(A)(2), Paragraph III(B)(2), Paragraph IV(A)(2), Paragraph IV(B)(2), Paragraph V(A)(3), Paragraph V(B)(2), Paragraph VI(A)(2), Paragraph VI(B)(2)



## **VI MONITORING AND RECORDKEEPING REQUIREMENTS**

The permit requires Permittee to develop and implement a number of monitoring plans and procedures. These include : (i) Dust Control Plans, (ii) Non-Point Source Monitoring Plan (Appendix 14), (iii) Startup, Shutdown, Malfunction Plan, (iv) Operation and Maintenance Plan, and (vi) Visual Emission Observation Procedure. All of these plans and procedures are defined in Sections I and II of Attachments B and C of the permit. In addition, Permittee is required to continue operation of continuous monitors for temperature, opacity, carbon monoxide, and nitrogen oxides on the two stacks that accept exhaust from the four kilns, and continuous monitors for opacity on the clinker cooler stacks. In addition to records of all monitoring activities, Permittee is required to maintain records of parameters such as kiln feed rates, clinker production rates, and fuel type and usage rates.

The General NESHAP provisions, contained in 40 CFR part 63 Subpart A, require Permittee to record each startup, shutdown and malfunction of process equipment. Permittee has indicated that the large number of individual pieces of equipment at the facility and the potential for individual pieces of equipment to be started up and shut down several times a day, will make it extremely burdensome to record all startup, shutdown, and malfunction events occurring at the plant. Permittee has requested to record each startup, shutdown and malfunction of process equipment systems, as opposed to individual pieces of equipment. Permittee has been advised to work with ADEQ's compliance staff to identify and implement efficient recordkeeping procedures, provided that they are consistent with EPA policies on the issue.

## **VII Testing**

Permittee is required to conduct the following types of tests : (i) Opacity tests once during the permit term on all dust collectors, (ii) Tests once during the permit term on particulate matter from dust collectors that have emission limits accepted voluntarily by Permittee, (iii) Initial and annual particulate testing on the stacks serving the kiln, (iv) Initial and periodic (once in 30 months) testing for dioxin/furans (D/F), (v) Tests once during the permit term for sulfur dioxide from Kiln 1, 2, and 3, and (vi) Tests once during the permit term on particulate matter from the clinker coolers.

With prior written approval from the Director, Permittee may conduct performance tests at less than the maximum operating capacity of the units being tested. In the event testing is performed at a lower rate as approved by the Director, the maximum operating process rate shall then become the process rate during the test plus 20 percent until a test is performed at the full load of the unit under representative operational conditions.